Facility Hazard Surveillance of JLab Facilities

Submitted by

JSA, LLC

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I. Purpose:

In accordance with I.117 (c) contract number DEAC05-06OR23177 hazard surveillance (due diligence) was conducted in the course of the transition of the JLab M&O contract from SURA to JSA.

II. Hazard Surveillance Methodology:

A surveillance team was formed that consisted of SURA and TJSO personnel. The team developed a hazard/mitigation checklist as an aid to survey JLab facilities. An example of that checklist is located in attachment A. A list of nominally moderate to high hazard facilities (as defined by presence of high energy, Oxygen Deficiency Hazards, High Radiation or High Contamination Areas, confined spaces, etc.) was then developed for prioritizing the surveillances. A listing of all facilities, including leased facilities was obtained, and cross referenced with the hazards identified above.

Each facility/area/room was walked through by one or more members of the team. When possible the person responsible for the building, room, or area was included in the walkthrough. The surveillance did not include access to overheads, sumps, or otherwise hazardous areas (e.g. confined spaces). Individual checklist sheets were then filled out for every area, including names of participants, and risk ranked using the existing JLab significance level as guidance for pre- and post-mitigation. The post-mitigation risk ranking was based on the actual mitigations found to be in place at the time of the surveillance (engineered controls, administrative controls, etc.). Finally, this information was entered in a database located at M:/safety/JSA_Transistion/checklist_database.xls. Included where appropriate are photographs to document the as found condition of facilities and/or hazards.

All accountable radioactive sources were verified and inventoried during this activity.

A portion of the 72 transportainers were also entered for condition surveillance. Transportainers with radiological postings, high use, or electrical connections were chosen for entry.

It is important to note that this surveillance was not a validation of codes/standards or OSHA compliance. In fact, several documents exist that document non-compliance or other recommendations to improve the safety of facilities. Namely, the suite of fire hazard analysis (FHAs) and pressure vessel safety inspection sheets held by the JLab fire protection engineer and the facility condition assessments located at: M:\planteng\PED_temp\Reports\Facility Condition Assessments
Both sets of documents are revised on approximately three year cycles. No fire detection deficiency or evacuation issues were identified in the course of these surveillances, including the

JLab. Additionally, some pressure vessels fabricated at JLab are not code stamped. All pressure vessels were not identified during the course of this transition activity.

JLab also has pre-existing asbestos containing material, managed through the JLab Asbestos Management Program found at: http://www.jlab.org/ehs/manual/EHSbook-606.html#pgfId-1869 .

III. Facility Surveillance Results and Recommendations

The vast majority of the facilities at JLab are low risk using the methodology described above. No instances requiring immediate work stoppage or immediate hazard mitigation were identified in the course of these surveillances (e.g no post-mitigation level 4) for JLab facilities. It should be noted that the high power beam dump used during original commissioning of the machine contains activation products (radioactive material) that will need to be safely and properly managed as this material is removed in support of the 12GeV upgrade. Some non-JLab laboratories in the ARC building had hazards that were improperly mitigated and the appropriate university safety personnel were notified. JLab IH personnel has provided direct assistance to help these universities mitigate the hazards.

Some JLab facilities have post-mitigation of 2 or 3. As such the ESH&Q transition team recommends the following action for follow-up after transition.

1. Establish a plan of action to address any risk level 2 or 3 item identified and submit to the TJSO contracting officer for action and direction.

2. Establish a team including ESH&Q, Facilities Management, Engineering and Project Management to perform the following:

    a. Review all the facility assessment reports recommendations, prioritize and resolve the identified deficiencies. Resolution may include taking no action, but the decision process should be documented.
    b. Review all the existing fire hazard analysis reports recommendations, prioritize and resolve the identified deficiencies.
    c. Review all pressure safety vessels/system deficiencies identified by existing documented inspections held by the fire protection engineer.
    d. Aggressive address water inleakage where electrical equipment or systems are affected. These areas include halls A, B, and C and building 97.
    e. Verify the CEBAF center F-wing life safety code issues currently being addressed by Facilities Management are resolved.
3. Prioritize effort and identify a project manager and support personnel as needed to resolve these identified deficiencies.

4. Enter all these items (from 1 and 2 above) into the JLab corrective action tracking system for tracking to closure.

ATTACHMENT 1

Jefferson Lab
Transition Hazard Analysis Checklist
EHS&Q Team

Jefferson Lab
Transition Hazard Analysis Checklist
EHS&Q Team

*Tracking #:*_____

*Building:*_____

*Room/Area:*_____

Risk Code	
Pre	Post
4	4
3	3
2	2
1	1
0	0

Date:
Walkthrough participants:

Major process(es) in area:

Environmental			
Category		Controls in use	Comments
Outside chemical storage		Permit ☐	
Chiller system/ underground utility	☐	Secondary containment ☐	
Petroleum Products	☐	Spill equipment ☐	
Refrigerant	☐	Bollards ☐	
Above ground storage tank	☐	Other ☐	
Gas storage	☐		
Discharges		Permit ☐	
Stormwater	☐	Secondary containment ☐	
City sewer	☐	Spill equipment ☐	
Air	☐	Other	
Waste		Permit ☐	
Hazardous waste	☐	Secondary containment ☐	
Non-hazwaste	☐	Spill equipment ☐	
		Other ☐	

Safety - Industrial Safety			
Category		Controls in use	Comments
Material Handling		Inspection/maint. Program ☐	
Crane	☐	Labels/signs (hazcom) ☐	
Forklifts	☐	Key control program ☐	
Storage areas	☐	Other ☐	
Utilities		Engineered Controls ☐	
Electrical distribution	☐	Inspection Program ☐	
Natural gas distribution	☐	Labels/signs (hazcom) ☐	
Other gas distribution	☐	Energy controls ☐	
Fire detection system	☐	Interlocks ☐	
		Other ☐	
General Work Area		Engineered Controls ☐	
ODH	☐	Inspection/maintenance ☐	
Machinery	☐	Personal Protective Equipment ☐	
Welding	☐	(PPE)	
Pressure vessels	☐	Local Exhaust Ventilation ☐	
Fixed Ladders	☐	Labels/signs (hazcom) ☐	
Confined Space	☐	Other ☐	
Emergency Egress	☐		

Safety - Industrial Hygiene		
Category	**Controls in use**	**Comments**
Non-Ionizing Radiation Radiofrequency (RF) ☐ Laser ☐ Static Mag. Fields ☐	Interlock system ☐ Labels/signs (hazcom) ☐ PPE ☐ Other ☐	
Chemical use Flammable ☐ Cryogenics ☐ Corrosive ☐ Compressed ☐ Poison ☐ Gas Carcinogen ☐	Engineered Controls ☐ PPE ☐ Fume Hood or LEV ☐ Other ☐	
Specialty chemicals Beryllium ☐ Lead ☐ Asbestos ☐ HF ☐ Deuterium ☐ Other ☐ Helium - 3 ☐	PPE ☐ Fume Hood or LEV ☐ Waste disposal area ☐ Other ☐	
Physical Hazards High noise ☐ Heat ☐	Labels/signs (hazcom) ☐ PPE ☐ Other ☐	

Radiation Control – RADCON		
Category	**Controls in use**	**Comments**
Radiological Areas Radioactive Material Area ☐ Radiation Area/HRA ☐ Cont. Area/HCA ☐	Training required ☐ Labels/signs (hazcom) ☐ Personnel Safety System ☐ Other ☐	
Equipment Rad. Generating Devices ☐ Other equipment ☐	Labels/signs (hazcom) ☐ Interlocks ☐ Other ☐	
Accountable Rad. Sources Account. Rad Sources ☐	Labels/signs (hazcom) ☐ SOP ☐ Other ☐	

Building Structure		
Category	**Controls in use**	**Comments**
Damage Water damage/leaks ☐ Mold ☐	Labels/signs (hazcom) ☐ Other ☐ ☐ ☐	

ATTACHMENT 2

JSA
Transition Facility Risk Ranking

(Risk Rank 2 and 3)

Building	Room/Area	Description	Pre Risk	Post Risk	Notes
97	LL hallway	hallway to experimental halls	4	3	***electrical room water leak on electrical panel***
96D	trailer	Hall B trailers	3	3	*vacuum pump oil *hydraulic fluid *high voltage testing of PM Tubes *3KV power supply 10mA *oven *hydraulic press *helium *paints *solvents *solders *RAD source ***structural support of floor is suspect *mold *water damage***
#14	Cooling Tower	cooling tower	3	3	*fixed vertical metal ladder no chains *high noise
	Cooling Tower	behind building 99	3	3	***vertical metal ladders no chains *metal rods sticking up without protection***
	Cooling Towers	beside trailer 35	3	3	* wooden ladders in poor condition *discharge to HRSD
59	5	Machine Shop	3	2	***machinery very crowded in small area creating hazard*** *compressed air *punch press *drill press *milling sander *sheer, grinder *fume hood *eye protection *circuit board cleaning *noise hazard *some exposed bldg insulation *sheet metal screws exposed
67	outdoors	generator, chem storage	3	2	***ballards missing around generator*** *ODH signs missing *cooling tower chemical storage *5000 gallon diesel generator
90	125		3	2	*208V *house air *milling machine *oven *portable stairs *flammables for cleaning *resins and hardners
90	126		4	2	*1 ton crane *house air *drill press *lathe *bandsaw *table saw *braizing *solvents for cleaning *occasional use of sources
101	Hall A	experimental hall	4	2	***water damage over compressed airline from water intrusion into the Hall*** *vesda fire *ODH0 and ODH 2 *pressure vessels *confined space *fixed ladders *RF *radiation area *contaminated radiological material *halon extinguisher *nitrogen *compressed air *flammables *magnetic fields *water damage *lead shielding *beryllium targets.
94	Hall B	experimental hall	4	2	***water leaking over electrical equipment in the electrical room*** *vesda fire *ODH0 and ODH 2 *pressure vessels *confined space *fixed ladders *RF *radiation area *contaminated radiological material *halon extinguisher *nitrogen *compressed air *flammables *magnetic fields ***water damage over electrical panel mitigated temporarily by gutters*** *lead shielding *beryllium targets
95A	lead storage building	3 sided storage bldg	2	2	*lead storage ***no way to wash hands at the point of handling lead***
BSY	Tunnel	Hall A Beam Transport Line	3	3	***water intrusion into the tunnel is leaking over 110/208 electrical*** * lead * rad area * ODH * VESDA * Heat Sensors * Sprinkler

Building	Room/Area	Description	Pre Risk	Post Risk	Notes
HR	Hampton Roads Crane warehouse	warehouse storage	3	2	*poor lighting *fire extinguishers not inspected *chemical hazards *bullet case storage *rigging slings in poor shape we do not want these slings used at **JLAB** ***Jlab has not used this material in years and should excess it to eliminate exposing employees to these hazards ***Due to obvious poor maintenance of rigging equipment, JLab should review the subcontract (if any exist) and subcontractor performance if this company is contracted to perform any lifts at JLab***
OA-1	outside area 1	outside areas	2	2	****compressed gas distribution system outside bldg 90 allows for any gas to be connected to these lines(flammable, non-flammable, etc.)*** *crane with oil *crane with diesel fuel *pump oil storage, generator *compressed gas storage *oil storage *diesel fuel storage tank 500 gallons

Note: The ***italicized*** items in this column are those items that should be addressed and further mitigated.